

ABSTRACT

A method of sensing an environmental agent, comprising obtaining a sample from the environment and transferring the sample into the working fluid for dispensation to a detection module. The sample and working fluid mixture is filtered through a porous polymer Bragg grating. By comparing the refractive index of the grating with the mixture to the refractive index of a grating without the sample, a difference in the refractive index aids in the identification of a hazardous agent in the environment. The sensor also acts as a chemical filter by trapping specific target agents by a highly specific reaction with a conjugate molecule. Recirculation of the working fluid throughout the system provides a sensor that is “always on.”